

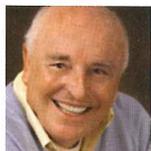
The Catalyst

An annual newsletter for alumni and friends of the University at Buffalo's
Department of Chemical and Biological Engineering

What's Inside

Fall 2009

Hlavacek retires



With three decades of service to UB and the chemical engineering profession, Vladimir Hlavacek has retired. **Page 3**

National visibility

Esther Takeuchi profiled as a paragon of American ingenuity.

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Remembering Sol Weller

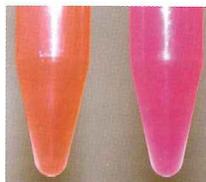


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Making nutraceuticals

Mattheos Koffas has licensed his technique for producing anthocyanins using plants.

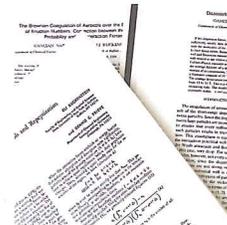
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Magnum opus, part 1

Eli Ruckenstein is collecting his life's work (so far).

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Fun and games

Chemical engineering faculty and students find time to relax a bit.

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Rakesh Jain delivers inaugural Ruckenstein Lecture

The Inaugural Lecture of the Eli Ruckenstein Lecture Series took place on May 4 at UB Center for the Arts.

Chemical engineering principles applied in the fight against cancer

Dr. Rakesh K. Jain, Andrew Werk Cook Professor of Tumor Biology at the Harvard Medical School and Director of the Edwin L. Steele Laboratory of Tumor Biology at Massachusetts General Hospital, presented a lecture entitled *Normalizing Tumor Microenvironment to Treat Cancer: From Mathematical Model to Mouse to Man*.

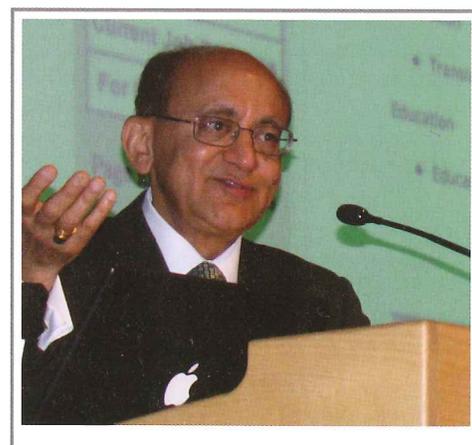
Cancerous tumors require blood vessels to grow and spread to other organs. Dr. Jain demonstrated that the blood vessels of tumors are abnormal - not only in their structure, but also in their function. Using a mathematical model, he showed consequences of this abnormality - specifically, how this abnormality contributes directly to malignant properties of a cancer as well as prevents treatments from reaching and attacking tumor cells. Dr. Jain proposed a novel

concept that "normalizing" tumor vessels would allow cancer therapies to penetrate the mass and to function more effectively. He then went on to show first in mice and then in cancer patients, that drugs originally designed to destroy tumor vessels can, paradoxically, also repair them, creating a window of opportunity to attack the cancer most effectively.

Jain delivered his lecture to a packed auditorium. The event attracted researchers from all over campus, and many more from the downtown medical campus. The lecture was followed by a lunch reception during which discussions continued. The department was abuzz for many days afterward, and the clear consensus that this was a fitting and highly successful start to the lecture series.

Indeed, Prof. Jain and Eli Ruckenstein have some history together: Jain's very first research paper (*Spontaneous Rupture of Thin Liquid Films*) is with Eli, and resulted from a course project he worked on with him as a graduate student at Delaware—an auspicious start to an outstanding career!

Jain is a pioneer in tumor biology, drug delivery, *in vivo* imaging, and bioengineering. He is a member of the Institute of Medicine, the National Academy of Engineering, the National Academy of Sciences and the American Academy of Arts and Sciences.



The Ruckenstein Lecture Series

The annual Ruckenstein Lecture is named in honor of Distinguished Professor Eli Ruckenstein and is supported by the Ruckenstein Fund, a new endowment with an ongoing campaign. Funds generated from this endowment will be used to support the Ruckenstein Lecture Series and provide resources to improve teaching and research laboratories in the Department of Chemical & Biological Engineering.

See page 5 to learn how you can help to secure Ruckenstein's legacy by contributing to this fund.



Warm greetings to alumni and friends of CBE at UB! It is hard to believe that it has been over three years since I first wrote to you in this column as Chair. I recounted then the tremendous advances that the department saw under the leadership of Carl Lund. His has been a tough act to follow, but with great support from faculty, staff, administration, students, alumni and friends I have found it a satisfying and rewarding position to hold, so much so that I have agreed to continue as Chair for a second three-year term. There's much yet that we all can do!

We have seen many milestones and positive developments over the past year, and in this issue of *The Catalyst* we recount some of them for you. We had wonderful success in launching the annual Ruckenstein Lecture Series. Rakesh Jain gave a superb lecture, presenting to a diverse audience ideas that were at once both sophisticated and accessible. He is moreover a truly gracious and kind man and a real credit to the Series. This event follows from our initial success in endowing the Ruckenstein Fund, which I described to you in the previous issue. The campaign is still on, so if you want to contribute to the future of the Series remember your gifts still are doubled by a match from the School of Engineering.

Gifts are just one way to contribute to CBE. We also count on alumni and friends for feedback that helps us improve, and provides guidance to our current students. Think of how you might have benefitted from "real-world" advice when you were a student here. We've set up our web site to allow you to convey your wisdom this way, and I urge you to avail yourself of this opportunity.

After a sharp increase, faculty numbers have leveled this past year. Publication, enrollment, and funding numbers are all up, and as we consolidate following our faculty's growth I expect them to continue to rise quickly. More important, quality is not hurting either. Our B.S. program sailed through re-accreditation, and faculty continue to gain national recognition for their scholarship.

It is a great time to be a friend of the department, and we look forward to giving you ever more reason to be proud of your association with us.

Sincerely,
David Kotke

P.S. Let us know how you like the new format and production quality of our newsletter. I think it looks pretty nice! I hope it gives you even more reason to look forward to your next issue of *The Catalyst*.

Alexandridis named UB Distinguished Professor

Dr. Paschalis Alexandridis, professor in the Department of Chemical and Biological Engineering, School of Engineering and Applied Sciences has been named UB Distinguished Professor.

The UB Distinguished Professor designation was created by the Office of the Provost to recognize full professors who have achieved true distinction and who are leaders in their fields.

It is open to faculty members who have been a full professor for at least five years and who have achieved national or international prominence and a distinguished reputation within their field through significant contributions to the research/scholarly literature.

Alexandridis conducts pioneering research on the self-assembly and directed assembly of polymers, biopolymers, supramolecules and nanoparticles. One third of his total research funding has come from industry, including Dow Chemical, Bausch & Lomb, Kao Corporation, and Xerox. His research papers include more than 110 refereed journal articles and about 50 conference proceedings, which altogether have received more than 5,400 citations. His *h*-index now stands at 39.

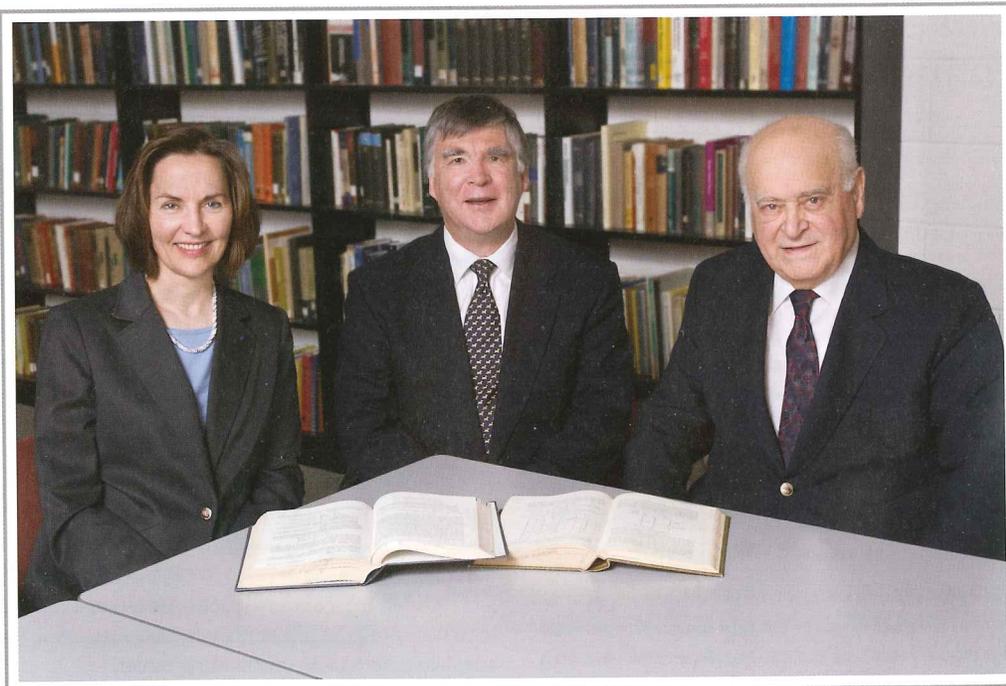
He has received numerous awards, including the National Science Foundation's Faculty Early Career Development Award, the Sigma Xi Research Society Young Investigator Award, the Bodossaki Foundation Academic Prize in Applied Science, the UB Exceptional Scholar Award for Sustained Achievement, and the SUNY Chancellor's Award for Excellence in Teaching.

Alexandridis joined the UB Engineering faculty in 1997 after serving as a Postdoctoral Associate and Assistant Professor at Lund University, Sweden. He holds a Ph.D. in chemical engineering and a master's degree in chemical engineering practice from the Massachusetts Institute of Technology.



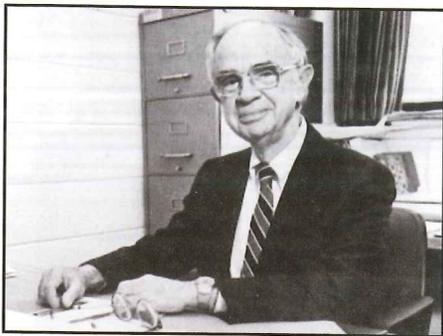
Lockett joins CBE Department

We are pleased to announce that National Academy of Engineering Member and former CBE Adjunct Professor Michael J. Lockett has joined the Department as a full-time member of our faculty. Lockett comes to us following a 25 year career at Praxair and an appointment as a Lecturer at the University of Manchester Institute of Science and Technology. Lockett will add an industrial perspective to the design and separations courses.



With the addition of Mike Lockett, the Department's faculty now includes three members of the National Academy of Engineering. Professor Lockett, center, is pictured here with NAE members and CBE professors Esther Takeuchi and Eli Ruckenstein.

Sol Weller, 1918-2008



A remembrance by Emeritus Professor Tom Weber

The Department was saddened by the passing of Dr. Sol Weller on August 24, 2008. He was 90 years old. His wife, Miriam, had passed away two years prior.

Sol was born in Detroit, did his undergraduate work at Wayne University, and then went on to the University of Chicago where he earned his PhD in Chemistry in 1941 under the Nobel Laureate, James Franck. Over the next two decades, he worked in chemical engineering, specializing in kinetics; coal liquefaction; gas separation by permeation; catalysis, and standardization of catalyst-testing methods.

The Department of Chemical Engineering at UB began in 1961. During the first four years or so, the faculty had all received graduate degrees in Chemical Engineering. Dr. Joseph Bergantz, the founder of the Department, sought to hire some people with strong backgrounds in Chemistry and industrial research with interests in materials and reaction kinetics. At that time, Dr. Weller had had extensive experience with the Philco Corporation, Houdry Process Corporation, the U.S. Bureau of Mines, and the Manhattan Project at Columbia University. However, he had long harbored an interest in teaching and academic research, and so was especially attracted to the rapidly-expanding Department here.

It was soon clear that he had made the right choice in coming here. From the very beginning, he had a continuous string of excellent graduate students, many of whom remained in contact with him long after they had left. He was a favorite among the students for his teaching, and in 1973 he received the SUNY Chancellor's Award for Excellence in Teaching and in 1983 was awarded the C. C. Furnas Memorial Chair. Various national awards followed for his research, including the Schoellkopf Medal in 1984. He had professional collaborations in Spain, Turkey, England, and Israel.

Dr. Weller was well known on the campus, not only in engineering, but in upper levels of administration. He served on various committees in the Department until he retired in 1988 with nearly twenty-five years of service. He was a member of the very important Presidential Review Board for a number of years.

But there was another side of him that many were not aware of. When Dr. Bergantz brought him here in 1965 for an interview, he mentioned to me at lunch that he played the piano, one of my hobbies as well. But he and his wife, Miriam, had two grand pianos that they would bring from California if he were to join the faculty – he'd need a home with a floor strong enough to support them! He went on to relate to me how they had met. When he went to Chicago in 1938 to begin his graduate studies, someone told him of a young woman who was looking for someone to play piano duets with. Sol visited her and they immediately recognized that their pianistic skills were an excellent match. Within weeks they were engaged and were married shortly thereafter, the beginning of a marriage of 62 years.

Sol joined the Department soon after his interview here. Not too long after the Wellers moved into their new home, they invited faculty members over one evening. Although I knew they were bringing the pianos, I was somewhat in awe at the sight of them at one end of the living room. I wondered what they might sound like. All of a sudden, Sol announced an impromptu recital. He and Miriam sat down and played the two-piano arrangement of Arthur Benjamin's Jamaican Rumba. (if you're not familiar with it, see here: [youtube.com/watch?v=WO3ph8V-r1Y](https://www.youtube.com/watch?v=WO3ph8V-r1Y)). I was really impressed! Their pianistic abilities were clearly several cuts above mine.

Sol remarked to me one time that when he was young, he gave serious thought to becoming a musician. He had to make a decision between music and a career in science and engineering, and finally chose the latter. The Wellers had four children, all musical. His son, Ira, played at Sol's retirement party in 1988, and is on the faculty of the Conservatory of Music at Purchase College and a member of the Metropolitan Opera Orchestra. Many of the Wellers' friends in Buffalo were musicians and Sol had very close ties to the Music School at UB.

As a colleague of Sol's, I was always impressed with his ideas and opinions expressed in committees and at faculty meetings. I often thought that he would have made a good Department Chair. Indeed, in 1976, he was called upon to be Acting Chair. I'll never forget a Memo that he sent out to the faculty. It had something to do with a request from above, probably regarding the yearly inventory of the labs or the updating of our resumes – something that was not our favorite assignment. In any case, he must have felt pressured for our responses, and he threatened that this request, unlike some others, was a "request that was not going to go away." I got the message right away and complied with the Memo immediately. Years later when I was Chair and the "tables were reversed," I often recalled that Memo.

Sol never indicated any interest in being the Chair, and I'm sure that having to write memos like that one was one of the reasons. But the main reason was that he came to UB to teach and do research, and he was a master of both.

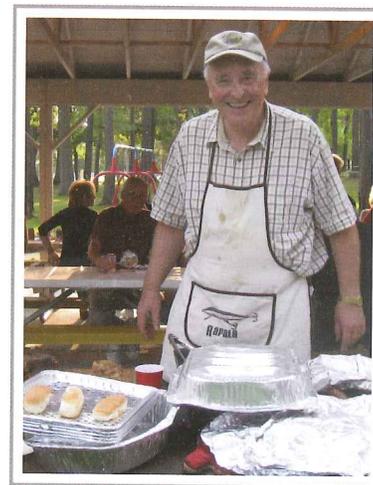
Vladimir Hlavacek retires

Following almost 28 years of service to the Chemical & Biological Engineering Department, Dr. Vladimir Hlavacek has retired.

Vladimir Hlavacek joined the chemical engineering department at UB in 1981. While here, he worked in the area of ceramics and reaction engineering. Throughout his career he has published over 400 reviewed technical papers in the areas of chemical reaction engineering, material science, ceramic engineering, pollution control, environmental engineering, combustion, detonation and applied mathematics. He has also presented close to 500 lectures and seminars at university, industrial and governmental research labs around the world. He taught graduate and undergraduate courses including Chemical Engineering Design, Advanced Reaction Engineering, Frontiers of Chemical Technology, Green Engineering, and Transport Phenomena. In 1991, while Director of the Laboratory for Ceramic and Reaction Engineering, he was named Clifford C. Furnas Eminent Professor. Prior to his arrival at UB, he was a Senior Scientist and Head of the Laboratory for Reaction and System Engineering at the Institute of Chemical Technology in Prague.

It is safe to say that no one on the faculty here or at most other universities can equal the practical knowledge of industrial chemistry possessed by Prof. Hlavacek. He loved to share this knowledge with our graduate and undergraduate students, often filling entire lectures with stories related to the hands-on issues of chemical engineering.

His departure leaves a void that will be difficult to fill. Nevertheless we are happy that Prof. Hlavacek and his wife Zdena will be able to pursue full-time his many extracurricular interests, chief among which are sailing and ocean fishing. We wish them both a long and happy retirement!

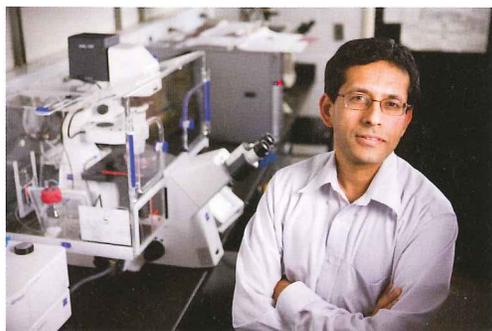


Prof. Hlavacek hard at work at his favorite reactor — the barbecue grill!

Research Highlights

CBE's strengths in nanotechnology, biological engineering, and computational science are well aligned with the University's and the Nation's priorities

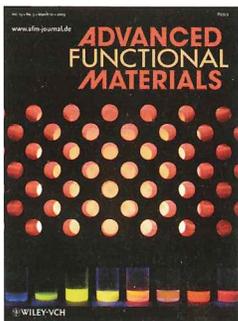
Neelamegham applies novel systems-biology approach to study human inflammatory diseases



Sriram Neelamegham co-authored two widely noticed papers. One was originally published in *The FASEB Journal* and the other in *Bioinformatics*.

His innovative systems biology approach to understanding cells' carbohydrate structures is leading to a new understanding of how human inflammatory illnesses and cardiovascular disease develop. Supported by NIH grants, the project aims to define novel strategies to perturb the glycome (the complete set of an organism's carbohydrate structures in cells), to identify new targets and molecular therapies to combat a range of inflammatory diseases.

Systems biology is an interactive mathematical and experimental approach focusing on whole systems of complex biological functions and interactions, rather than individual units (a single gene or protein) in isolation.



Luminescent silicon nanocrystals light the way to new technologies

Work performed in the Swihart laboratories in collaboration with a visiting Ph.D. student from Germany, Anoop Gupta, and his advisor, Hartmut Wiggers, was featured on the cover of *Advanced Functional Materials* in March 2009. This is the most recent in a long line of publications from the Swihart group on photoluminescent silicon nanocrystals and their applications. These luminescent nanocrystals may play important roles in biological imaging for cancer diagnosis, in low-cost solar cells, and in efficient light-emitting diodes. Swihart has recently given invited lectures on this research in Kyoto, Japan, Wuhan, China, and at the University of Massachusetts. In coming months he will give invited lectures at Tulane University, at ETH in Zurich, Switzerland, and at ENEA, near Rome, Italy.

Koffas' green – extract leads to license agreement

Anthocyanins, naturally occurring pigments and antioxidants, may help in controlling blood glucose levels, aiding weight management and conditions such as diabetes.



Through SUNY's Research Foundation, CBE Associate Professor Mattheos Koffas has been able to develop these molecules for the first time, through a proprietary application licensed to a subsidiary of Irvine, California-based ChromaDex Corp.

Koffas said, "While all plants produce anthocyanins, they are challenging to extract and study in well-defined mixtures. Now we can harvest them from a lab to study their antioxidant and other properties. We're especially interested in applications related to treating the metabolic syndrome, i.e., chronic pathological conditions stemming from obesity."

Through the agreement, ChromaDex may produce and market the compounds, making them commercially available for the first time. ChromaDex is a world leader in the development of phytochemical and botanical reference standards and the creation of associated intellectual property.

Recent PhD: Eric Grzelak studies wetting from a molecular perspective

Scientists and engineers are often challenged to design materials that produce a specific response when



contacted by a fluid. For example, ultrahydrophobic surfaces that readily repel water are needed to develop water-resistant clothing and stain-resistant fabrics. This and related phenomena are involved in the study of *wetting*.

Nanometer-sized features on a surface are believed to significantly influence the way in which a fluid wets a surface. Small changes in surface topography can alter the wetting behavior from a situation in which a fluid spreads evenly across an entire surface to one in which a liquid beads up into droplets like water on a recently waxed car. Unfortunately, the connection between the microscopic structural aspects of a surface and the macroscopic behavior a fluid exhibits are poorly understood. The Errington group is using molecular simulation to probe this issue. This computational approach allows one to study well-defined model systems, and thus readily establish the manner in which small changes to the microscopic details of a system are manifested in observable properties.

Eric Grzelak recently completed a PhD dissertation focused on this subject. He examined how the contact angle a droplet forms on a surface—a measure of its "wettability"—evolves with the height of regularly-spaced (nanoscale) hills. The results suggest that the spacing between the surface features has a substantial influence on the observed behavior. For large enough spacing between these extremely tiny hills, the evolution of the contact angle can be predicted by a simple and often-used expression introduced by Wenzel in 1936. However, for relatively small spacing (e.g. 5 nm), the Wenzel equation significantly overestimates the change in the contact angle with roughness.

Undergrad program lauded by evaluator in accreditation review

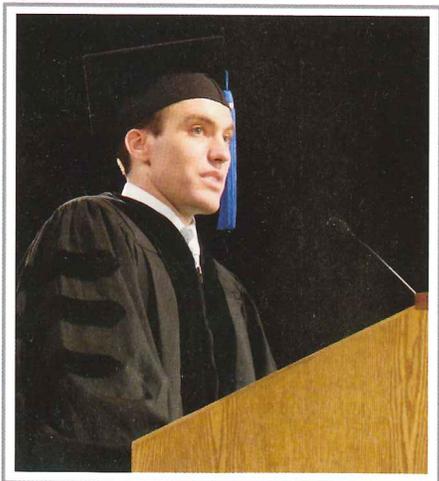
The undergraduate chemical engineering program was recently reviewed by the Accreditation Board for Engineering and Technology (ABET). We received a full six-year reaccreditation, and some praise for innovation.

Accreditation from ABET is important for many reasons. First, accreditation assures that a program meets or exceeds quality standards established by the chemical engineering profession. Second, many employers and graduate schools preferentially recruit students from ABET-accredited programs. Third, state boards of professional licensure in engineering typically require applicants to have graduated from an ABET-accredited program.

We are happy to report that the review went very well. Our low student to faculty ratio was cited as a strength of the program. The reviewers were also particularly impressed with our continuous improvement strategy, which the evaluator described to us as a best practice that should be emulated by other schools. This process includes assessment of student proficiency in various subject areas, followed by identification of program strengths and weaknesses, and finally the implementation of actions targeted at improvement of the program. A database-driven web interface coordinates the process among all involved.

If you're interested in further information, visit www.cbe.buffalo.edu/undergrad/Improvement/

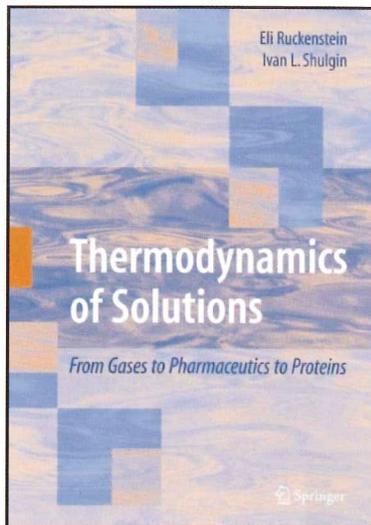
Finally, we wish to express our thanks to those alumni and employers that assisted us in our program's improvement process by completing surveys and providing advice through other vehicles. Your efforts have proven invaluable in our drive to strengthen the undergraduate program.



CBE graduate student and UB GSA President Dan Kehoe delivers an address at the 2009 commencement ceremony.

Collecting the works of Eli Ruckenstein

Eli Ruckenstein has embarked on a project to collect his most notable and influential works into several reprint volumes.



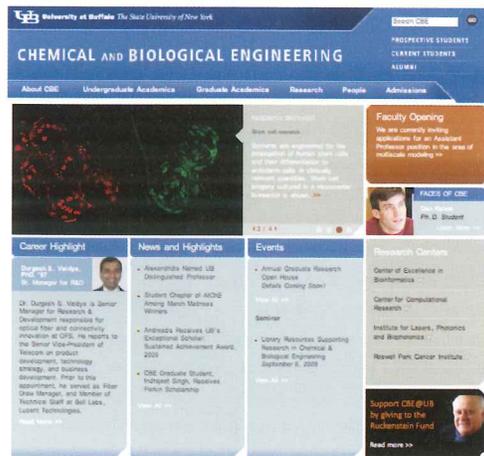
Each volume is centered on a particular theme taken from among the many diverse research areas that Prof. Ruckenstein has contributed to over his career.

The first volume, co-edited with longtime collaborator Ivan Shulgin, recently appeared. It collects many of his important works in thermodynamics of solutions, and it is aptly titled *Thermodynamics of Solutions: From Gases to Pharmaceuticals to Proteins*. The second volume is near completion, and will focus on his work with nanodispersions. More are planned.

Now at 84 years of age, Prof. Ruckenstein is still very active in research. In fact, in terms of papers published each year, he continues to be the most productive of the department's faculty (18 in 2008). The question remains then whether his ability to compile these volumes will stay ahead of his new contributions to the literature!

Giving to CBE

Support from alumni and other benefactors is an increasingly vital ingredient for the success of universities today, and this is all the more so for academic departments in public universities. An important part of our mission is to provide access to higher education—and all the opportunities that entails—to people from every walk of life. However a consequence of low tuition can be funding shortfalls that impair our ability to realize our mission, and which ultimately erodes our reputation. As an alum and friend of the department, that may be important to you too. So if you haven't thought of giving to your alma mater before, we hope you will consider doing so now.



Web site redesign

Our web site has undergone a much needed facelift, with some new functionality added under the hood.

Thanks to some in-house IT support, the CBE web site is becoming more and more a tool to get the work of the department done. The web site of course still plays the traditional role as a repository of information and a bulletin board for news and events, but using newer "Web 2.0" capabilities, it is doing much more. Undergrads are assigned advisors, for example, via a web form that matches them with faculty based on academic background and career preferences. Advisors can record notes of meetings with students (which can be reviewed by the director of undergraduate studies, as necessary), and remove checkstops to permit students to register for courses, which is otherwise not allowed without completing advisement. Our program of continuous improvement also relies on web site support. Faculty record there anonymized information about student performance, including scans of relevant paperwork, and faculty subcommittees can review the material to identify weaknesses in the curriculum. The web site also continues to provide means for alumni to communicate with us and our students. Stop by sometime, click the *Alumni* link, and leave some advice for our current students, or give your take on "What does a chemical engineer do?"

There are two primary ways in which you can direct your support to benefit CBE:

The Ruckenstein Fund. This is an endowment, so contributions are invested. Revenue is generated in perpetuity to support the Ruckenstein Lecture (see p. 1) and help with laboratory improvements. Donations to the fund are matched 1-to-1 by SEAS!

Donations to the CBE department are spent where need is greatest to advance CBE and our students. Funds help us attract outstanding faculty, promote the department, and enrich student experiences.

For your gift to have the most impact on CBE, direct it to the department using the attached mailer.

Thank you!

Ruckenstein named one of Fifty Eminent Chemical Engineers of the Foundation Age

As part of its centennial celebration, AIChE looked back and identified a select few "engineering heroes of the Foundation Age", who remain "household names in chemical engineering labs and industry." We are proud (and not surprised) to report that our own **Eli Ruckenstein** was chosen for this elite group. In the previous issue of *The Catalyst* we detailed Eli's life story and his achievements, and we are pleased to see him continue to be recognized for his outstanding contributions to the profession.



Eli and other Eminent Foundation Age engineers are listed in the September 2008 issue of *Chemical Engineering Progress*.

Swihart invited to conference of "Rising Star Engineers"



Mark Swihart was one of 80 engineers selected from more than 230 application to participate in the 14th annual National Academy of Engineering

"Frontiers of Engineering" symposium, held at Sandia National Laboratories at the University of New Mexico in September 2008.

"The Frontiers of Engineering program brings some of the country's rising-star engineers, from a diverse range of disciplines, together for an exchange of ideas that will surely help contribute to keeping us at the forefront of technological advancement and may even spark a breakthrough that changes the way we live," said NAE President Charles M. Vest.

Kofke elected VP of CACHe

David Kofke was elected Vice President of the CACHe Corporation. CACHe (Computer Aids for Chemical Engineering) is a 40-year old non-profit organization that promotes cooperation among universities, industry and government in the development and distribution of computer-related educational aids for the chemical engineering profession. CACHe for example took the steps decades ago that led to the widespread use of process simulation in chemical engineering education and practice. As that technology has matured CACHe has turned its attention to other applications, including molecular simulation, CFD and systems biology.



The CACHe vice-President is in effect also the President elect, so Kofke will take on that position next summer after finishing his two-year term as VP.

How would Norman Rockwell illustrate this?

The Sep/Oct issue of *The Saturday Evening Post* celebrates "American Innovations and Ingenuity". As the holder of more patents than any other living woman (more than 140 to date!), Prof. **Esther Takeuchi** has on this occasion been asked by the magazine to contribute her thoughts on innovation, and how America can maintain its strength in this arena. We won't steal their thunder, so to learn about her insights check the newsstands and pick up an issue. Send it in and we'll have it autographed by her for you!



Andreadis elected fellow of American Institute for Medical & Biological Engineering



Stelios Andreadis has been elected to the College of Fellows of the American Institute for Medical & Biological Engineering (AIMBE). Stelios' areas of research include gene therapy, tissue engineering of skin and blood vessels, controlled protein and gene delivery.

Located in Washington, DC, AIMBE is the leading advocacy group for medical and biological engineering and comprises of some of the most important leaders in science and engineering. Founded in 1991, AIMBE has earned a reputation as a prestigious public policy leader on issues impacting the medical and biological community. AIMBE is regarded by key legislators as the preeminent voice on the subject. Through the College of Fellows, the Academic Council, the Council of Societies and the Industry Council, AIMBE represents roughly 50,000 influential leaders.

Student Recognitions

Emily Leitsch, American Institute of Chemical Engineers Outstanding Junior Award; **Lynn Wong**, American Chemical Society Outstanding Student Award; **Stephanie Lam**, American Institute of Chemical Engineers Outstanding Senior Award; **Jaime Egnaczak**, Joseph and Adele Augustyn Memorial Book Award; **Kyle McHugh**, **Kevin Pustulka**, **Jacob Weiner**, Chemical and Biological Engineering Academic Excellence Awards; **Ivie Aifuwa**, John Cole, David Kennedy, Dean's Scholar Award; **Sha Liu**, **Shilpa Patil**, **Venkataramanan Ravi**, UB Engineering Graduate School Ambassador Award; **Stephanie Lam**, **Emily Leitsch**, **Jacob Weiner**: James W. And Nancy A. McLernon Engineering Scholarship; **Chi Lo**, Presidential Fellowship; **Stephanie Lam**, **Kevin Pustulka**, **Jacob Weiner**, UB Engineering Senior Scholar Award; **Ellen Cardone**, **Hila Dvora**, **Katherine Schadel**, Schomburg Fellowship;

Kristina Kolp, Felix Smist Scholarship; **Dan Kehoe**, SEAS TA of the Year.

Three CBE graduate students received honors at the 2009 SEAS Poster Competition. **Folarin Erogbogbo** won 1st place for his poster entitled *First in vivo Cancer Imaging and Lymph Node Mapping with Silicon Nanocrystals*. Honorable Mention was awarded to **Michael Sellers** for *Surface and Grain Boundary Diffusion in Tin* and to **Meng Horn Lee** for *The Role of NJK Pathway in Adherens Junctions Regulation*.

Lock wins AIChE poster award

Lye Lock, a PhD student working under the direction of Dr. **Manolis Tzanakakis**, has won an award for a poster she presented on her work on the expansion and pancreatic differentiation of human embryonic stem cells in bioreactors at the AIChE Annual Meeting in Philadelphia, PA. This highly competitive award is presented to only three graduate students per year.

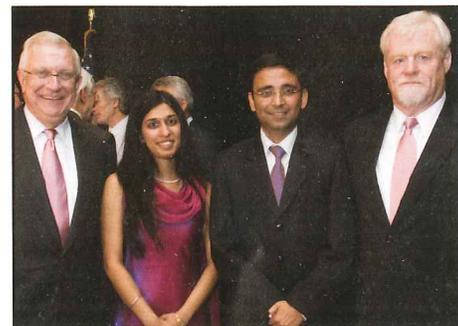
Erogbogbo service recognized

Folarin Erogbogbo received trophies from the McNair Foundation and C-STEP for two separate service activities. In the first, Folarin spoke at the national McNair Scholars conference on the subject of *Why Earn a Ph.D.?*, to an audience of 400 students from around the country. The second was for Outstanding Service to the Collegiate Science and Technology Entry Program (C-STEP) through Tutoring, Mentoring, Research, and Teaching. Folarin started as a C-STEP tutor as an undergrad, mentored many undergrad researchers, and this summer he taught the C-STEP research methods course.



Singh receives Perkin Scholarship

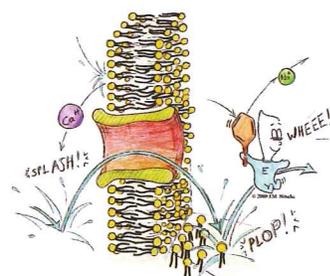
The Society of Chemical Industry America awards a \$5,000 Perkin Scholarship to a student from a university selected by the Perkin Medalist of that year. Honeywell's Dr. Ian Shankland (below, right) as the 2008 Medalist has selected CBE@UB for this honor. The Scholarship recognizes outstanding performance and potential in the advanced study of applied chemistry or related sciences. The 2008 Perkin Scholarship winner is **Indrajeet Singh**, who is pursuing his PhD advised by **Sriram Neelamegham**, studying the effect of hydrodynamic forces on protein behavior. Indrajeet is proud to be the first in his entire family to receive a PhD. His wife, Anuroop, also a student at UB, is pursuing a MS in Economics.





The Lighter Side

All work and no play makes Elroy a dull boy



Huge crowd turns out to see CBEs introduce Bill Nye



Bill Nye, the science guy, visited UB on April 22 as part of the University's Distinguished Speaker series. He won over the huge crowd with his usual geeky wit, cool demos and an environmentally conscious message.

CBE was well represented at the event, with three of our family taking speaking roles. Prof. Ryan, as VP for Undergraduate Studies, welcomed everyone; Dan Kehoe, as GSA President remarked about the students' selection of Bill Nye to speak; and Prof. Takeuchi was given the honor of the speaker introduction. She made a strong case for getting involved in science, pointing out that to contribute you don't have to solve all problems, just one piece, and together we make big advances.

CBE's Infrared Sox earn playoff berth



CBE regularly fields a softball team composed of grad students, faculty, alums, and friends. Over the years we've bounced around a couple leagues, looking for one that best fits our skill level.

This year our biggest obstacle to success has been hitting the weather. If you're in Buffalo you may have noticed it has rained every Thursday this summer. Well that's the day we're scheduled to play.

Woody Allen said that 80% of success is just showing up, and that about describes what was needed to make the playoffs. But hey, we're there, and we won one or two since. And now, as of this writing we're just two wins away from making the final four.

Game day is forecasting rain.

Student AIChE among March Madness winners



The March Madness membership contest was initiated by the national chapter of the AIChE to encourage a final round of new student outreach before the end of the academic year. The challenge is for each school to achieve at least 50% national AIChE enrollment.

With a lot of hard work from the Student Chapter leaders, UB was among the 59 March Madness winners! A special note of thanks goes to Student Chapter President Jacob Weiner and Faculty Advisor Marina Tsianou for their enthusiastic efforts.

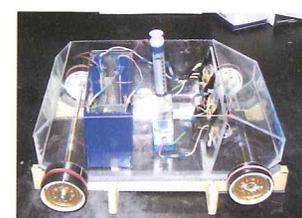
Holiday party turns CBE students into architects



CBE grad students and faculty rang in the holidays with the annual holiday bash in the typically inviting confines of 206 Furnas Hall. Ghosts of seminars past could do nothing to dampen spirits. Festivities included a mashup of faculty photo headshots dancing onscreen in famous music videos, à la Billy Crystal at the Oscars.

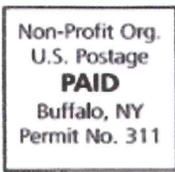
One of the recurring highlights of the party each year is the gingerbread house contest. Contestants form teams and race to build cracker-and-candy houses to be judged on height, stability, and aesthetic appeal. Considering the quality of the entries, we think we're ready to challenge the civil engineers.

Chem-E Car competition: On to the finals!



The Chem-E Car is a national student competition to design a chemically powered small-scale vehicle that drives a specified distance while carrying a specific cargo. Our UB students applied teamwork, creativity, and other chemical engineering skills (not to mention countless tests and trials, and some fun), to two designs, *Chemmy* and *The UB Tank*. The entries earned 4th and 2nd place, respectively, at regionals held in Chicago last February. *The UB Tank*, a car powered by a zinc-air fuel cell and utilizing an 'iodine clock' reaction as a stopping mechanism, is heading to Nashville in November to demonstrate its 'formidable capabilities' at the AIChE National Meeting.

Congratulations to all who participated, and best of luck at the finals!



MESSAGE FROM THE GSA



Alex Buffone

President of CBE Graduate Student Association

This year I've had the pleasure of being GSA President for CBE. During this time, my fellow officers Hila Dvora (VP), Stella Alimperti (Treasurer), Ellen Cardone (Secretary), Kate Shaul and Hao Fan Peng (Senators) and I have moved on several fronts. First, we've held a wider variety of events than before, with more fun activities. These include coffee and donut breaks for Monday morning pick-me-ups, a Halloween party (costumes and all), and a holiday party (see inside this issue).

We've also worked to improve student life beyond breaks and parties. We re-decorated the graduate lounge with new furniture to give the space a much needed update. Also, through our efforts senior graduate students are now included in the department seminar series, with the first two (Folarin Erogbogbo and Indrajeet Singh) presenting last Spring. Further, GSA now has input on the selection of the external speakers. The first "student choice" speaker will be Prof. David Putnam of Cornell University, whose seminar will coincide with our 12th Annual Research Open House, scheduled for October 21.

As good as these advances are, our most important action this year was input we gave to the CBE Faculty Graduate Committee about proposed revisions to the graduate curriculum this semester. This in fact led to a change in the new first-year course load which I believe will be beneficial to the incoming class.

Items on the agenda for the coming year include setting up a photo board outside the department offices showing all CBE graduate students, moving the Open House poster session to the much more spacious atrium of the Center for the Arts (no more jokes about squeezing more space from Furnas by putting a student and poster in each elevator!), establishing a department-wide welcome-back picnic to meet the new graduate class, and setting up an alumni relations committee.

With that said, I see the CBE GSA as a club that both represents the students' interests while organizing fun activities that bring the department together. I feel we've taken big steps to these ends, and in that regard I feel this year has been a great success!

MESSAGE FROM THE AIChE



Emily Leitsch

President of Student Chapter of the AIChE

The student chapter of AIChE here at UB has big plans for the upcoming year. The e-board members elected last year have been brainstorming and gathering ideas to help diversify the club's activities as well as increase membership in all classes, March Madness is always a club goal. The chapter is planning on expanding every aspect of the club this year. Some fun new ideas include small periodic talks and presentations by grad students in the department, adopting a section of highway, participating in a K-12 outreach program, and selling delicious chocolate candy bars! All other favorite club activities will continue of course, such as Thursday night bowling, the biannual potluck with the faculty and grad students, and E-week, where we compete with other UB engineering clubs in various engineering-themed events. Last, but certainly not least, the Chem-E Car portion of our club is eager to start working on the car and getting it ready for the upcoming national competition. We are trying hard to get younger students involved as well as come up with some innovative new ideas for the actual car propulsion and stopping mechanisms. The upcoming academic year is going to be an exciting, fresh, and busy year for the student chapter of AIChE.

BREAKING NEWS

Takeuchi selected for National Medal of Technology

As we were going to press we received the very exciting news that Esther Takeuchi has been chosen as a recipient of the 2009 National Medal of Technology! This is the highest honor bestowed by the United States to an engineer. She will receive the award in a White House ceremony on October 7.

With Eli Ruckenstein, who received the National Medal of Science in 1999, our department can now boast of having *two* faculty among its ranks who have received this very high distinction. This is certainly a proud moment for us, and I hope for all our friends and alumni. We look forward to providing more details on this happy news in the next edition of *The Catalyst*.